The Celestial Sphere

(15th Century wood carving)

The challenge of communicating the findings of Science:
How to see things differently!

New World View

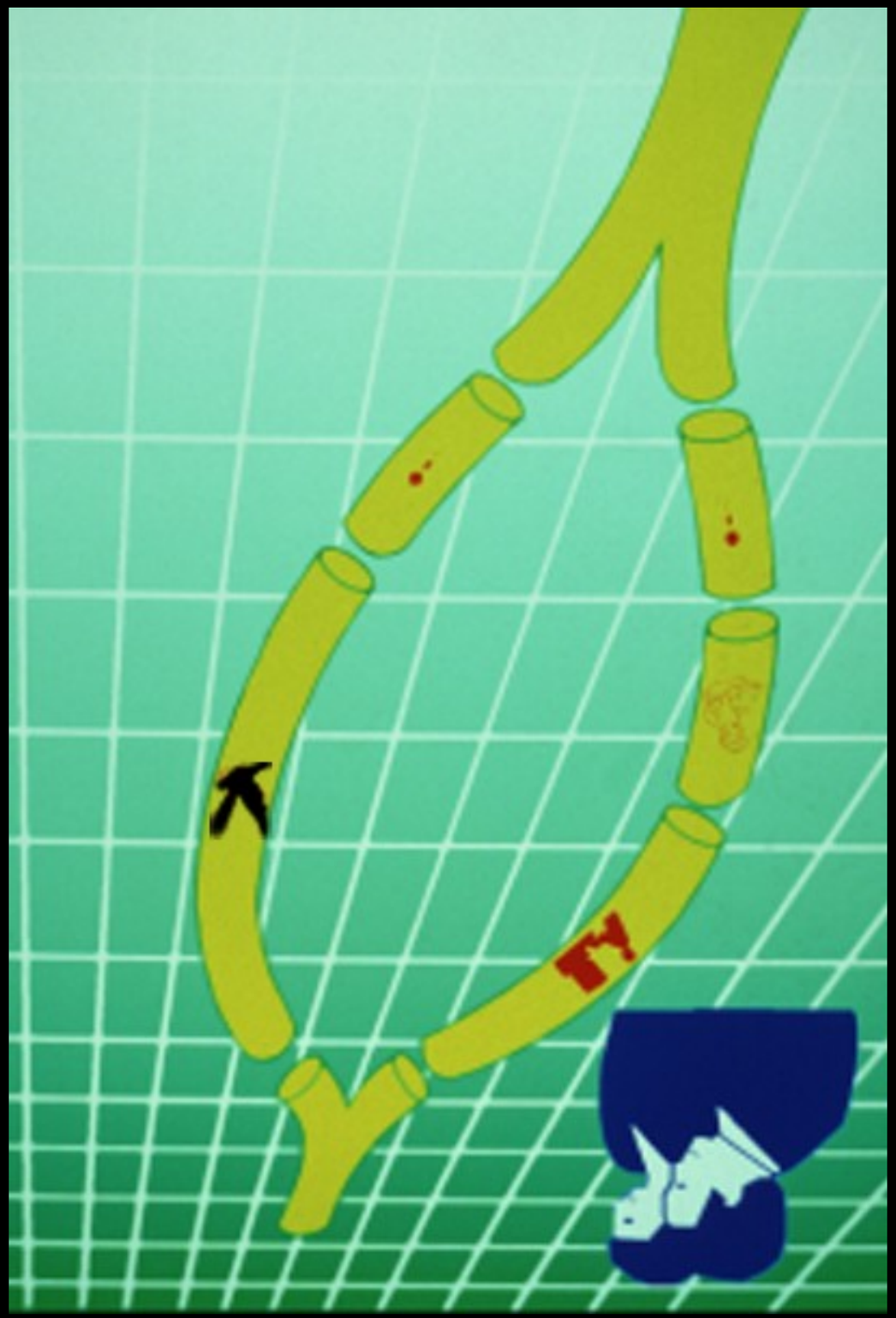
Scientific procedures designed to investigate phenomena uncover new ways of looking at the world around us

Scientist

The scientist who asks questions about the Old World View

Old World View

Our ordinary, everyday understanding of the world around us



The logic of investigating simple learning

Response → Consequence

Behaviour → **C**onsequence

Discriminative Stimulus (S^D)

Antecedent

Only when light is on

Behaviour → **C**onsequence (Food)

Discriminative Stimulus (S^D)

Antecedent

Behaviour → **C**onsequence (Water)

3-term Contingency

Stimulus Control

In the presence of this stimulus a response produces this effect …….

In the presence of this stimulus a response produces this effect …….

Negative Reinforcement occurs when a response decreases in frequency because it produces an aversive stimulus

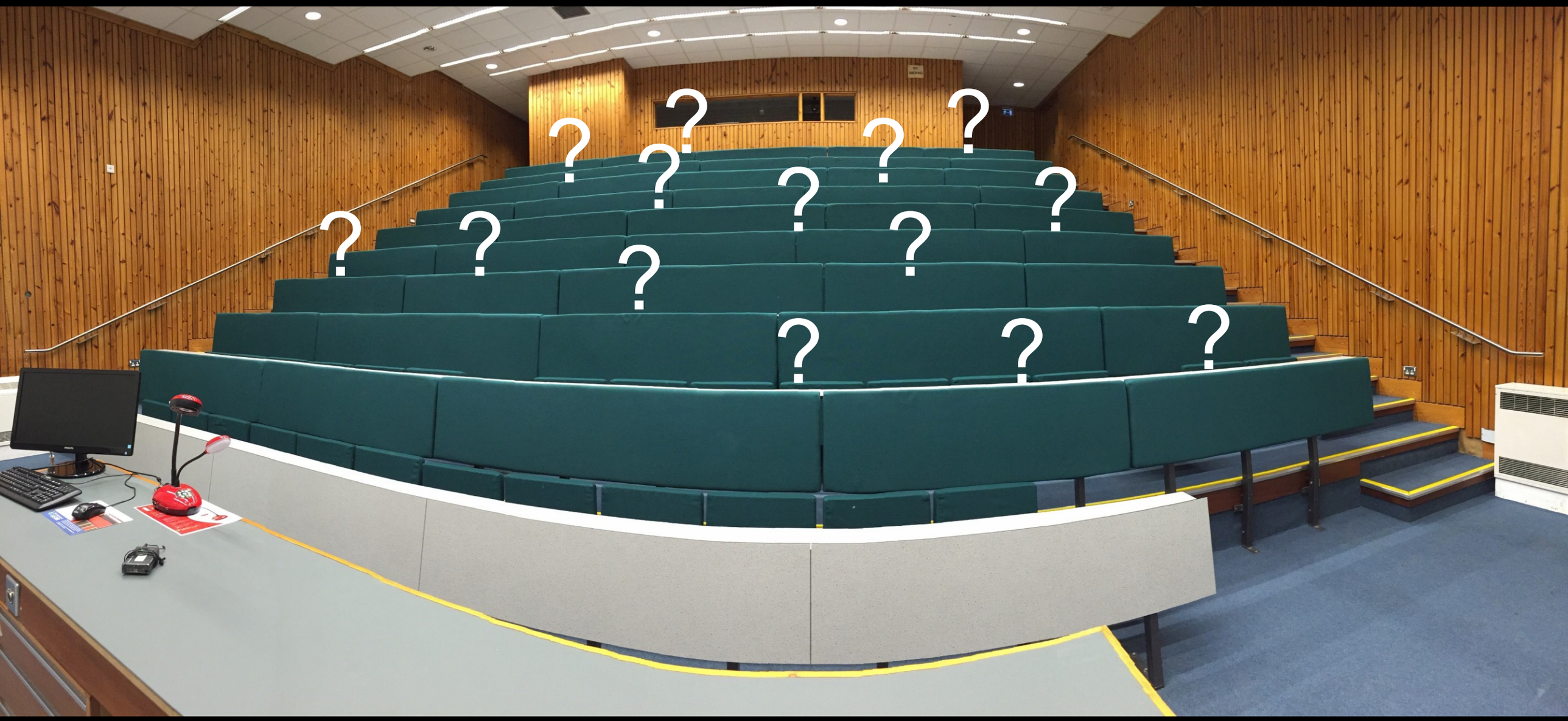
Correct

Incorrect

LT 8

My Discriminative Stimulus (S^D)

My Discriminative Stimulus (S^D)



16 Months old

What sorts of explanatory fictions
are likely to be invented?

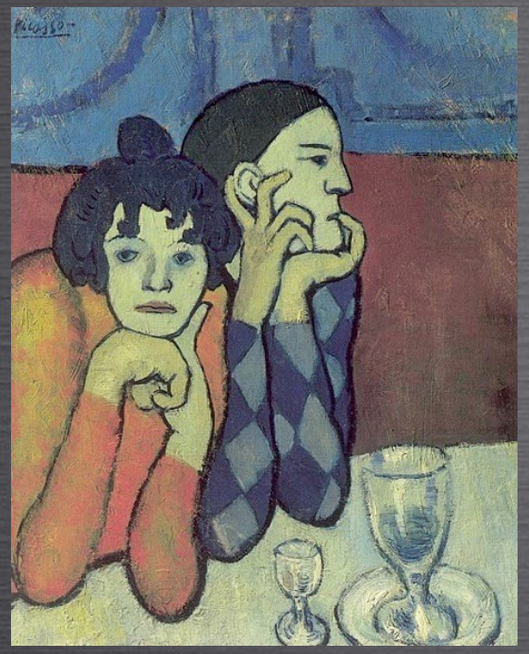
My Discriminative Stimulus (S^D)

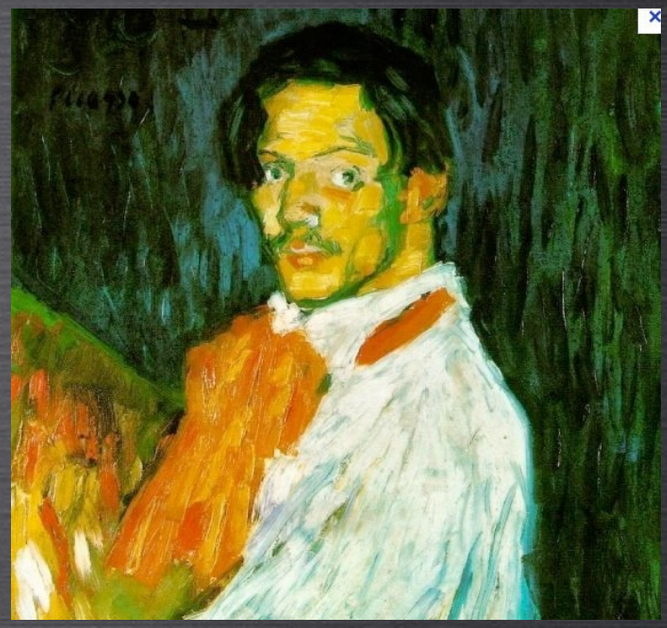
My Discriminative Stimulus (S^D)

My Discriminative Stimulus (S^D)

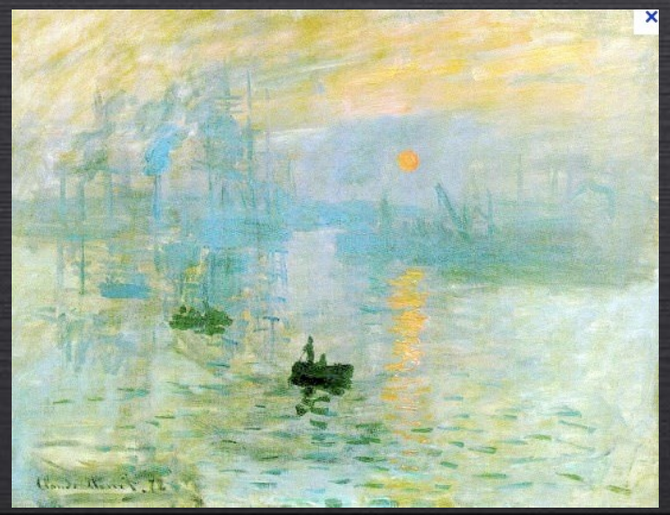
My Discriminative Stimulus (S^D)

Stimulus Control



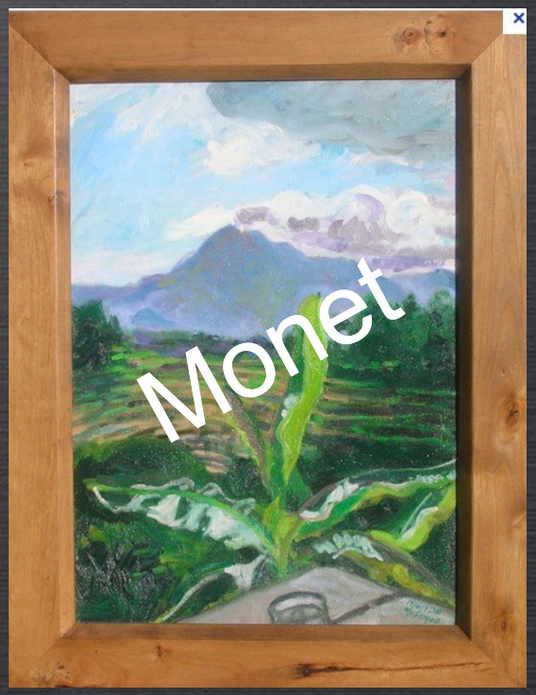


Monet
or
Picasso?



Menu 1
Menu 2
Menu 3

Stimulus Control



Monet
or
Picasso?

JOURNAL OF THE EXPERIMENTAL ANALYSIS OF BEHAVIOR 1995, 63, 165–174 NUMBER 2 (MARCH)

PIGEONS' DISCRIMINATION OF PAINTINGS BY MONET AND PICASSO

SHIGERU WATANABE, JUNKO SAKAMOTO, AND MASUMI WAKITA

KEIO UNIVERSITY

Pigeons successfully learned to discriminate color slides of paintings by Monet and Picasso. Following this training, they discriminated novel paintings by Monet and Picasso that had never been presented during the discrimination training. Furthermore, they showed generalization from Monet's to Cezanne's and Renoir's paintings or from Picasso's to Braque's and Matisse's paintings. These results suggest that pigeons' behavior can be controlled by complex visual stimuli in ways that suggest categorization. Upside-down images of Monet's paintings disrupted the discrimination, whereas inverted images of Picasso's did not. This result may indicate that the pigeons' behavior was controlled by objects depicted in impressionists' paintings but was not controlled by objects in cubists' paintings.

Key words: stimulus control, concept, pattern discrimination, vision, key peck, pigeon

When we see paintings by Picasso and Monet, we can with some accuracy recognize which is Picasso's and which is Monet's, even if we have never seen the particular paintings before. There are many possible cues for this discrimination, such as color, style of brushing, favorite subjects, and so on, but no single feature differentiates each artist. It is also clear that we have acquired such visual concepts of paintings of Picasso and Monet by experience. Can pigeons discriminate paintings of one artist from those of another artist? If they can,

stein & de Villiers, 1980; Herrnstein, Loveland, & Cable, 1976; Roberts & Mazmanian, 1988; Watanabe, Yamasita, & Wakita, 1993), artificial concepts (Bhatt, Wasserman, Reynolds, & Knauss, 1988; Watanabe, 1991), and symmetry of objects (Delius & Habers, 1978).

Most of these natural-concept experiments used a slide projector as the stimulus-presentation device, and pigeons showed transfer of discrimination of photographs to real objects and of real objects to photographs (Watanabe, 1993). Representational paintings have fea-

My Discriminative Stimulus (S^D)

My Discriminative Stimulus (S^D)

Stimulus Control

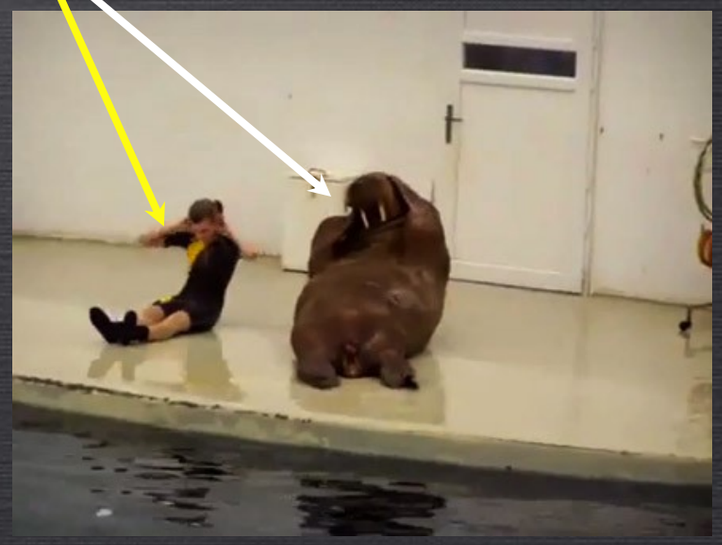
Stimulus Control

Antecedent

Discriminative Stimulus

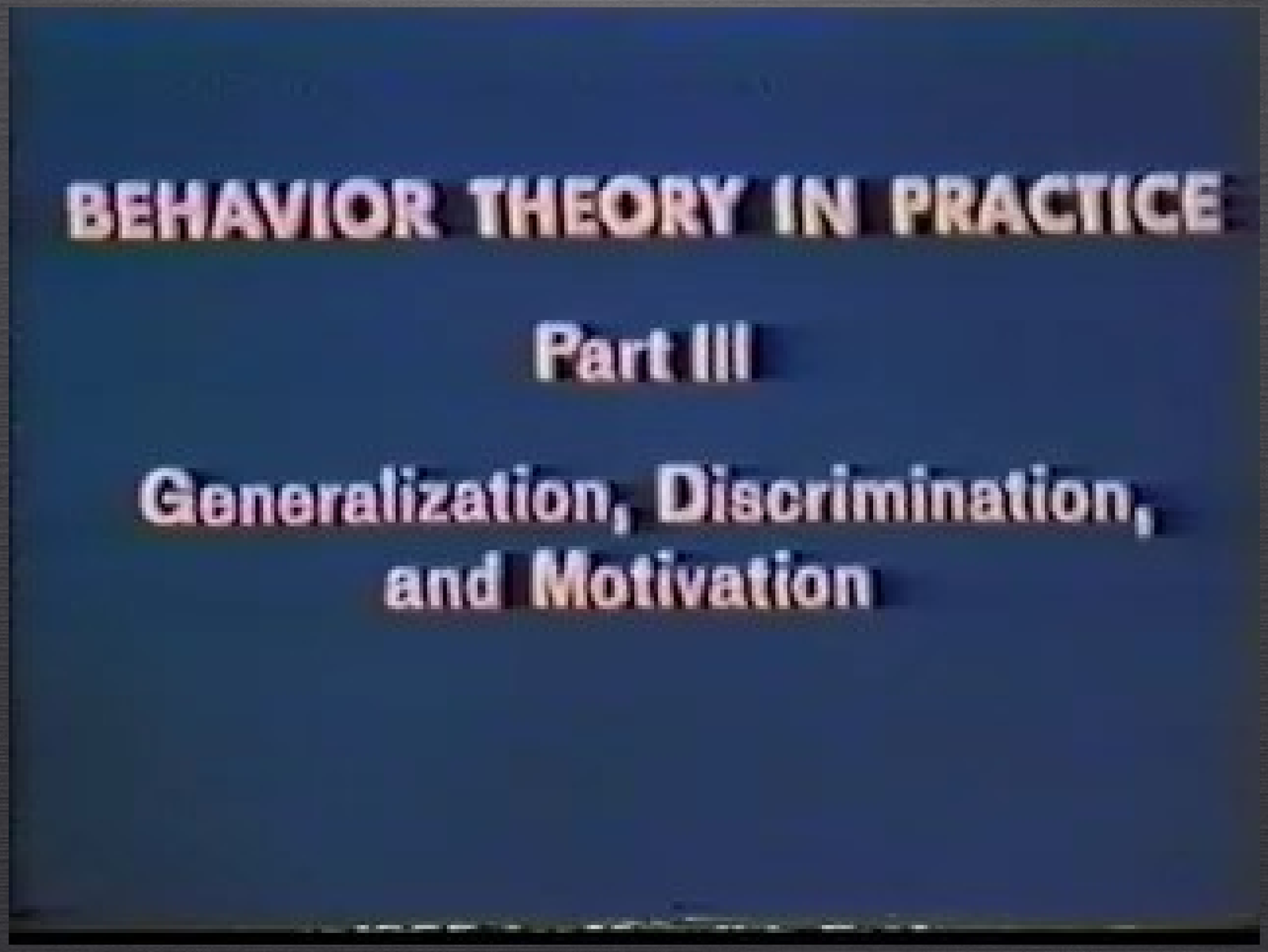
S^D

Behaviour



Consequence

Stimulus Control

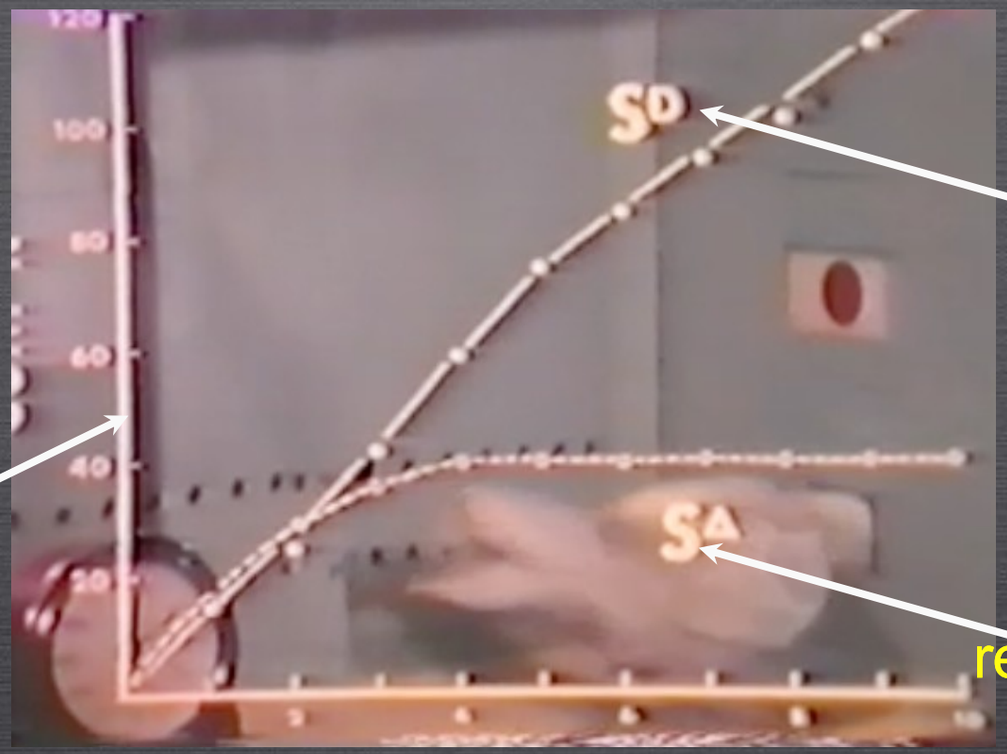


Chains

Menu 3

Pigeon responds in the same way to all stimuli

This is an example of
Stimulus Generalisation



Discriminative Stimuli

Responding reinforced in the presence of this stimulus

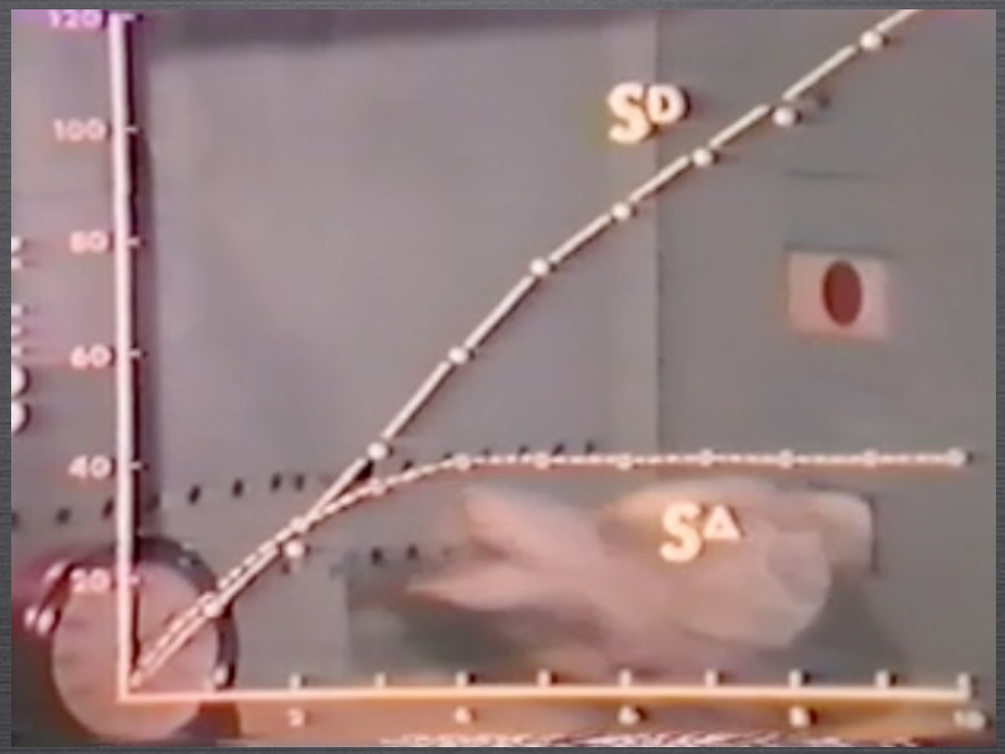
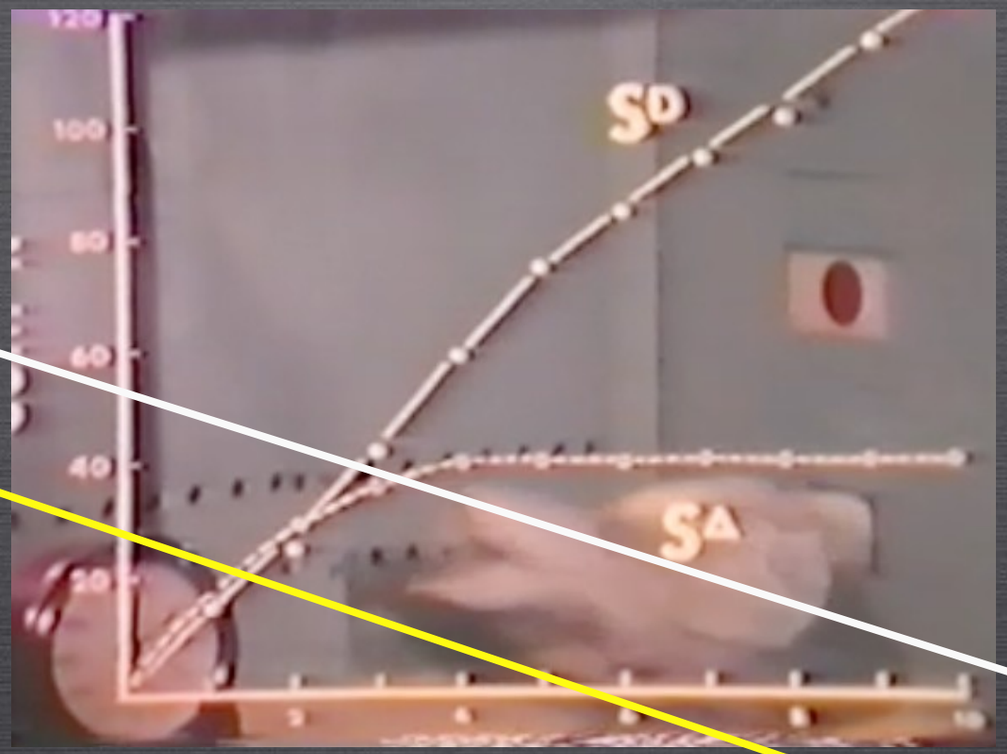
Number of Responses

Responding NOT reinforced in the presence of this stimulus

The pigeon responds differently to each stimulus

Differential Responding indicates that a discrimination has been made

Different Stimuli
Control
different behaviours



Different Stimuli
Control
different behaviours